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A National Environmental/Energy Workforce Assessment. Arkansas

National Field Research Center, Inc, Iowa City, Iowa

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A National Environmental/Energy Workforce Assessment

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This study is one of 70 volumes assessing the workforce needs (manpower needs) for pollution control and abatement in the United States for the five-year period of 1976 through 1981. Seven fields for pollution control — air, noise, pesticides, potable water, radiation, solid waste, and wastewater — are analyzed, together with energy-related programs currently accentuated by the national effort to solve energy supply problems.

Designed as Phase I of a three-phase program, the complete assessment includes the following volumes: one each for the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands; one for each of the ten EPA regions; a one-volume National Abstract; a volume on National Legislation; a volume on Business and Industry; and a four-volume National Summary. The information was gathered through extensive personal interviews with responsible federal, state, and local officials in every state; with officials of representative private industrial and commercial firms; and with representatives of national industrial and trade organizations.

Phase II will develop a broad national inventory of the entire range of post-secondary and higher education training offered in the pollution control and energy areas cited above, and Phase III will offer demonstrations for curriculum changes or modifications which appear necessary to assure an adequate and properly trained national environmental/energy workforce.

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State Planning	Energy Management		
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WORKFORCE ASSESSMENT

for

ARKANSAS

Conducted by:

NATIONAL FIELD RESEARCH CENTER, INC

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PREFACE

The research and development of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project was conducted under the aegis of the U.S. Environmental Protection Agency by the National Field Research Center, Inc., Iowa City, Iowa, and the Denver Regional Office. This report is an assessment of the State of Arkansas and is one of five state reports within Federal Region VI.

The State of Arkansas Report presents an overview of the current workforce, projections of workforce requirements (1976-1981), training and certification, and career potential in environmental pollution control and abatement. The environmental areas depicted within this report are air, noise, potable water, pesticides, solid waste, waste water, radiation, and energy conservation/conversion.

FOREWORD

This State report is a product of Phase I of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project in Arkansas. The information contained within this report was obtained by extensive on-site interviews and research of project related materials. The information retrieval was conducted through representative federal, state, and when time allowed, local agencies. Telephone and written surveys were utilized as a secondary research source.

Data which were documented herein are representative of the best professional judgements of experts currently working in the field.

This study is designed specifically for use as a reference tool at the federal regional level as well as at the state level. It is anticipated that the people of the State of Arkansas will be the beneficiaries of this endeavor.

National Environmental Energy Workforce Assessment

Phase I

ARKANSAS

State Summary

I. AIR

There are four major economic activities in Arkansas: agricultural, wood products operations, mineral processing, and petrochemical processing. All of these activities contribute to air pollution problems in Arkansas in the form of excessive emissions of particulate matter such as smoke and dust.

Under the Arkansas Water and Air Pollution Control Act, authority for the administration of the air quality program has been allocated to the Department of Pollution Control and Ecology, the Division of Air Pollution Control. There has been no responsibility delegated at the local level for air quality control.

In the private sector of Arkansas, industry has organized the Arkansas Federation of Air and Water Users in order to inform the members of proposed revisions to existing environmental standards, and the establishment of new performance standards. The Federation has estimated that 200 to 250 people are involved in air abatement programs in the state.

From the available information it appears that the professional field will increase at an annual rate of approximately three to five percent. The positions will be primarily at the degreed or higher levels in most situations, e.g., engineers, chemists, attorneys. Increased regulatory and control activities could diversify career opportunities.

II. NOISE

Currently there is no state agency in Arkansas which has been designated with the responsibility for noise pollution control and abatement. The major responsibility for environmental noise control has been allocated to the local level.

The state level workforce assigned noise pollution control and abatement responsibilities is non-existant at present. On the local level the workforce is predominantly composed of law enforcement personnel. However, estimates on the part of other Arkansas environmental control personnel state that approximately 20 persons statewide are involved in noise control on a full-time basis. Law enforcement personnel, of course, have other responsibilities aside from the noise field. Industrial personnel have estimated that a seven percent per annum increase in noise control personnel will occur to 1982.

The career opportunities in the field of noise control in Arkansas are exceedingly limited. These options will continue to be quite scarce over the next few years. Career potentials are not expected to improve during this period. However, increased regulation and public awareness will result in a need for specialists and for program development leading to more careers in the less than degreed technical areas.

III. PESTICIDES

In Arkansas, the State Plant Board, which is part of the Department of Commerce, has been designated as the state lead agency for the administration of the pesticides program. Several agencies cooperate with the Plant Board and include Arkansas Cooperative Extension Service, Department of Pollution Control and Ecology, Arkansas Game & Fish Commission, State Department of Health, State Forestry Commission, and the University of Arkansas.

Across the state, there are approximately 64 persons at the state level and 25,500 applicators including the private sector which is composed of farmers and ranchers for the most part.

Although the areas of responsibility are increasing rapidly insofar as pesticides registration and certification are concerned, there are few personnel increases which are anticipated for the State Plant Board. A two percent per annum growth is anticipated for this staff. The pesticides personnel other than the private applicator (the farmer) should experience a three percent per annum increase to 1982.

A number of disciplines which will necessitate varying technical skill competencies, as well as those which will require longer educational programs, will be needed. There will also be a need for professional level training in less specialized areas since pest control extends into the areas of water, solid waste and air.

IV. POTABLE WATER

Arkansas is a water rich state with five major rivers including the Mississippi. Overall, drinking water is considered to be of good quality. Pursuant to Arkansas state law, the Department of Health, Bureau of Public Health Engineering, has been designated as the agency with primary responsibility for drinking water in Arkansas.

The Arkansas workforce includes approximately 64 persons at the state level. There are approximately 750 certified operators in three classification categories. The turnover rate in the operator field has been reported at 10% to 15% per annum. Minimal increases in personnel are projected to 1982.

It would appear that the primary problem relative to increases in state staff are in the area of salary. The salary scales are ordinarily the hindrance to acquiring properly trained new entrants.

Operating personnel will continue to experience high turnover rates until salaries and upward mobility as well as job security are improved. Upgrade training will be a necessary requisite for operators in the next three to five years.

Career opportunities should be available at the degreed and non-degreed level. Operators will require increasing knowledge and skills as water treatment and distribution plants become more technologically complex.

V. RADIATION

Radiation control is not new to the State of Arkansas. In 1963, Arkansas became one of the earliest states to enter into an agreement with the Nuclear Regulatory Commission (NRC).

The Arkansas Department of Health, Bureau of Environmental Health Services, Radiological Section has been designated as the state lead agency for radiation control. The program includes several major areas of involvement. As an agreement state, Arkansas must conduct inspections of licensed facilities every two years. The Radiological Section responsibilities are categorized into medical/dental X-ray activity, non-healing arts X-ray, and particle accelerators.

The total statewide number of persons occupationally involved in radiation control has been estimated by Health Department officials to be approximately 500. This includes approximately 35 state level personnel. A five percent growth per year can be expected in both the state and private sectors.

Career opportunities will be available at the state level and also, to a greater degree, within the private sector in industry. Academically trained personnel with a degree in the engineering and science fields will define the largest percentage of the occupational categories which should be available to 1982. Radiation and nuclear expertise as well as computer training will represent some of the job skills which will be in demand in Arkansas.

VI. SOLID WASTE

Solid waste is a problem in Arkansas which requires the efforts of public relations and educational personnel to inform the citizenry regarding health and environmental hazards. State personnel feel there are still far too many examples of private citizens improperly disposing of garbage. Great strides have been made, however, in the area of solid waste management in Arkansas.

The Department of Pollution Control and Ecology, Division of Solid Waste Control, has been designated as the lead agency for the State of Arkansas solid waste management program. The Division administers the program under the Arkansas Solid Waste Management Act of 1971, and consists of 8 persons. The Department of Health, Bureau of Public Health Engineering contributes technical assistance to the Solid Waste Control program in the form of four public health inspectors. Solid waste management personnel statewide number approximately 650 to 660 according to experts in the field.

The state level solid waste management program should experience increases in staffing levels to 1982. Statewide personnel will also increase during this period.

There are a number of fields requiring both technical and professional level training which may develop in the future as solid waste activities become more diversified and complex. These positions will be a consequence of the Resource Conservation and Recovery Act and, to a lesser extent, the ramifications of the Toxic Substances Act.

VII. WASTEWATER

Arkansas waters may be described as of exceedingly high quality on one hand and highly degraded on the other. Usually these variations are attributable to the geographical region the state.

Primary responsibility for waste water has been allocated to the Department of Pollution Control and Ecology, Division of Water Pollution Control. The Division personnel assigned to wastewater number 36 and the statewide workforce is estimated at 1,300. Increases in the workforce are estimated at three to five percent per annum.

Careers will be available at the state level. Also, at the municipal level and in the industrial sector operators will be required. Wastewater treatment plant personnel will require increasing upgrade training over the next five years as technological advances are made in treatment techniques.

Overall, the pollution of Arkansas waters may be considered a reversible process. Application of wastewater treatment to municipal and industrial point source discharges and curtailment of non-point source discharges are the major components of the state's abatement program. Strict enforcement through education and surveillance will prevent future degradation of the state's waters.

VIII. ENERGY

Numerous energy companies are exploring possibilities of developing the vast lignite resources in the State of Arkansas. There are many pollution control aspects to be considered prior to the development of these resources, however. Land reclamation is an uppermost consideration.

There are two offices in Arkansas with energy related responsibilities. The Arkansas State Energy Office and the Department of Pollution Control and Ecology have been identified for purposes of this study.

The Arkansas State Energy Office has as its major purpose the development of an energy policy for the state. The Department of Pollution Control and Ecology maintains an Environmental Preservation Division which is primarily responsible for proposing recommendations regarding major projects which are planned for the state. These projects include river channelization and nuclear power plant construction, as well as others.

Professionals from both energy related offices have stated that the total number of people involved in energy pollution control and abatement, as well as conservation activities, is approximately 650. Increases should occur at a rate of three percent per annum to 1982.

Opportunities for careers in the energy field will be available in Arkansas on the degreed level. Post graduate training in certain areas such as nuclear power will be necessary.

STATE OF ARKANSAS

National Environmental/Energy Workforce Assessment
Pollution Control & Abatement Personnel
Projected Workforce Requirements (1976-1981)
(estimated)

Environmental Area	1976	1977	1978	1979	1980	1981	%/annum growth (average)
AIR	250	260	270	281	292	303	4%
NOISE	20	21	22	24	26	28	7%
PESTICIDES[1]	5,564	5,675	5,789	5,905	6,023	6,143	2%
POTABLE WATER	814	847	881	916	953	991	4%
RADIATION[2]	535	562	590	620	651	684	5%
SOLID WASTE	862	908	954	1,002	1,051	1,103	5%
WASTEWATER	1,361	1,413	1,466	1,528	1,585	1,645	4%
ENERGY	660	680	704	729	753	777	3%
TOTALS	10,066	10,366	10,676	11,005	11,334	11,674	3%

[1]The above does not include private applicators, but does include commercial applicators.

[2]The above includes some 500 persons involved in the usage of radioactive materials.

EDUCATION

The State of Arkansas offers very few environmentally related post-secondary educational programs. The major share of these programs, however, are located within the University of Arkansas system. The University of Arkansas owes its origin to a public land grant of the Federal Congress which was accepted in 1871. Subsequently, the College of Agriculture and Home Economics was established at Fayetteville, Arkansas. Today, the Bachelor of Science in Agriculture (B.S.A.) may be conferred upon a student upon successful completion of 132 semester hours through the College. Another program is available with an Environmental Science major. This degree is the result of an intercollege program in Environmental Sciences.

The University of Arkansas at Little Rock has developed a program which offers a Bachelor of Science degree in Environmental Health. This program is a cooperative effort which involves the University and the Arkansas State Board of Health, the Arkansas Department of Pollution Control and Ecology, County Health Departments and the Little Rock and North Little Rock City Health Departments. The curriculum was developed with the assistance of the Association of Arkansas Registered Professional Sanitarians and follows the guidelines established by the National Association of Sanitarians.

LEGISLATION

The environmental/energy legislation for Arkansas was obtained by request from various agency personnel and through various library references. Summaries of the legislation deemed most relevant to the eight subject areas of the workforce assessment were prepared, and are included in the respective state reports. The following list of laws represents virtually all environmental legislation for the state. Only certain of the following laws were summarized; the list is presented to show, by title, the kinds of laws which have been enacted.

Water and Air Pollution Control Act

Pesticide Use and Application Act

Solid Waste Management Act

Solid Waste Facilities Finance Authorization Act

Wastewater Licensing Act

Open Cut Land Reclamation Act

National Environmental Energy Workforce Assessment

Phase I

ARKANSAS

State Report

13

STATE PROFILE

Arkansas "The Land of Opportunity", is composed of three distinct regions: the mountainous upland, the low uneven Gulf Coastal plain, and the Mississippi Valley plain.

Summers are warm, temperatures exceed 100°F. at times, and the winters are short and mild. Precipitation is abundant and well distributed.

National forests comprise 2,500,000 acres and the Hot Springs National Park has 47 hot mineral springs. Arkansas is blessed with numerous state parks.

The 1970 population census reported 1,923,295 people in Arkansas; a 7.7% increase from 1960. The population is evenly distributed between urban and rural areas and the population density is 37.0 persons per square mile. Chief cities are Little Rock (the capital); Ft. Smith, hub of agriculture and mining; Pine Bluff, trade center for the agricultural region; and Hot Springs, a health resort.

More than 65% of all personal income was derived from private non-farm sources (mostly manufacturing), 24% from government, and 9% from agriculture during the early 1970's. There is a large poultry business and the largest groups employed in manufacturing are involved in food processing, lumber and wood products, and clothing manufacturing.

POLLUTION CONTROL AND ABATEMENT AGENCIES

The following agencies are those which are involved with environmental programs within the state. Each narrative provides a review of the functions and activities of each agency as they relate to environmental programs.

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

The Commission on Pollution Control and Ecology was changed by Act 472 of 1949, with administration and enforcement of all state laws and regulations pertaining to pollution. Accordingly, the Department of Pollution Control and Ecology administers pollution control and abatement programs in air, water, solid waste. The Department is also responsible for environmental preservation projects which involve review of river channelization, nuclear power plant construction, as well as highway construction, to ensure the protection of air, water, and land in the state.

FIGURE 1 STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
ORGANIZATIONAL CHART

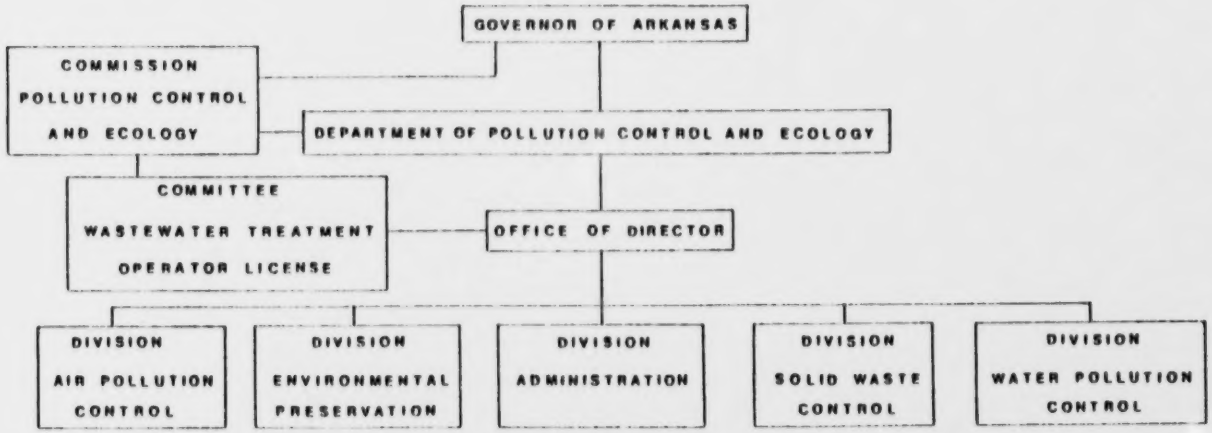
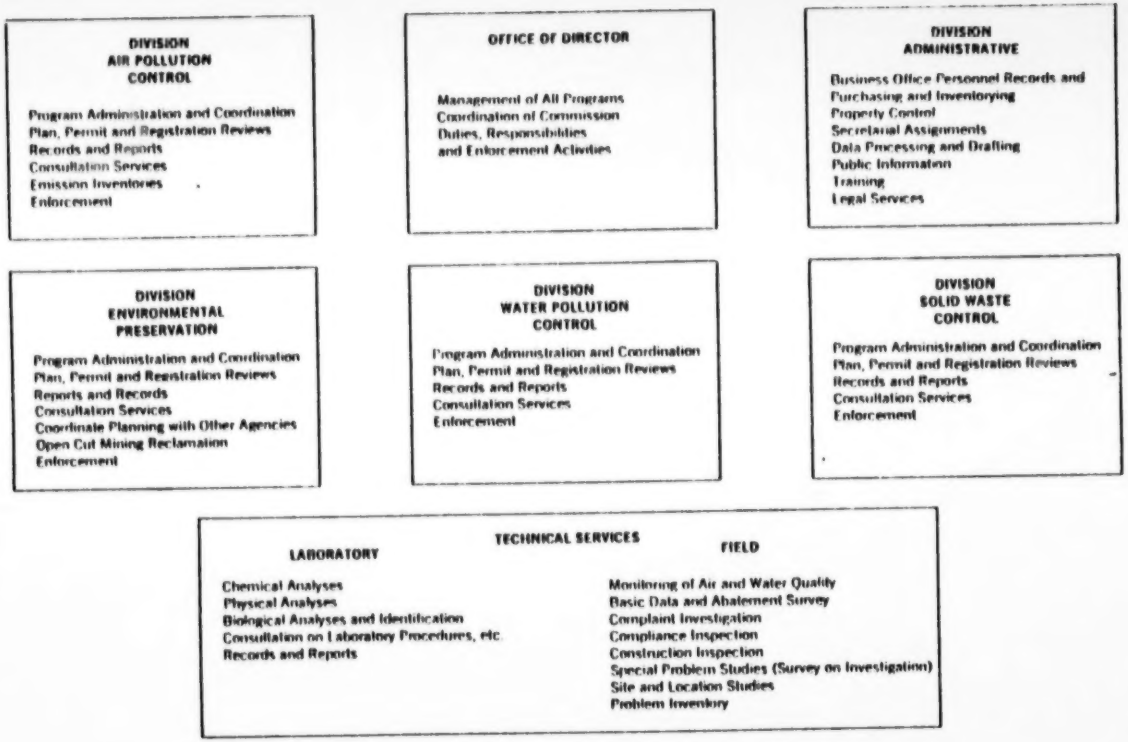


Figure 2 STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
FUNCTIONS CHART



ARKANSAS STATE DEPARTMENT OF HEALTH

The Department of Health, under the direction of the State Board of Health, State Health Officer, is composed of seven bureaus and one coordinator for Pharmacy Services Program. The bureaus are as follows:

- Bureau of Public Health Engineering;
- Bureau of Community Health Services;
- Bureau of Environmental Health Services;
- Bureau of Planning Evaluation and Training;
- Bureau of Medical Care Services;
- Bureau of Emergency Health Services;
- Bureau of Health Facilities.

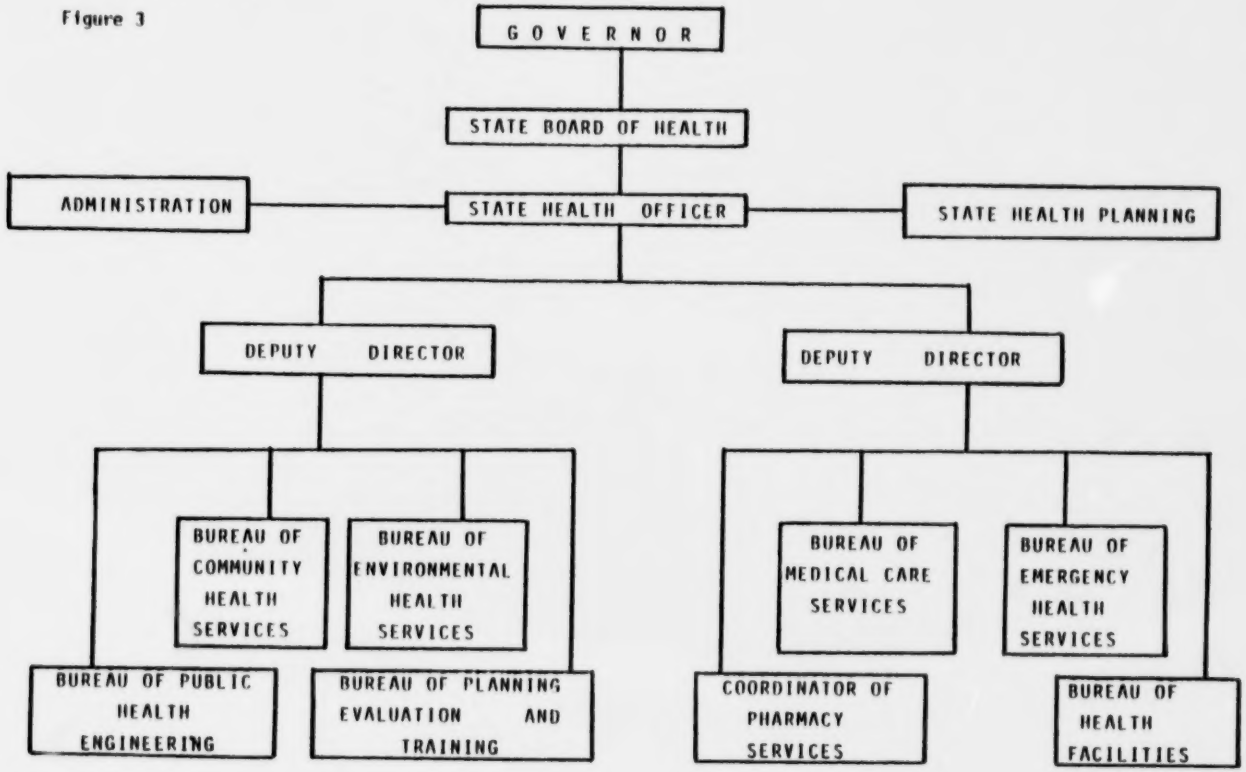
The Bureau of Environmental Health Services includes programs in radiological health, poison control, blood lead, blood alcohol, and maintains the environmental laboratories and the health mobilization team.

STATE OF ARKANSAS

DEPARTMENT OF HEALTH

Organizational Chart

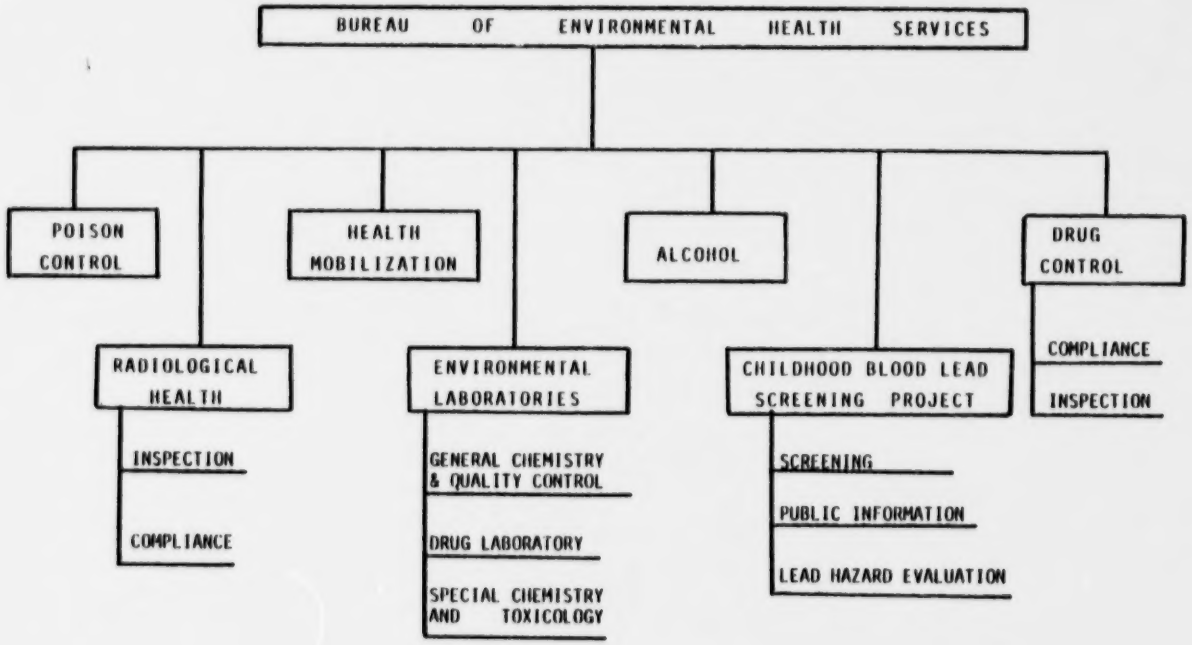
Figure 3



STATE OF ARKANSAS

DEPARTMENT OF HEALTH - BUREAU OF ENVIRONMENTAL HEALTH SERVICES

Figure 4 Organizational Chart



ARKANSAS PLANT BOARD

The Arkansas Plant Board is a division of the Department of Commerce. The Plant Board consists of five divisions as follows:

- Marketing Division;
- Plant Industry Division;
- Feeds, Fertilizers & Pesticides Division;
- Seeds Division;
- Administration.

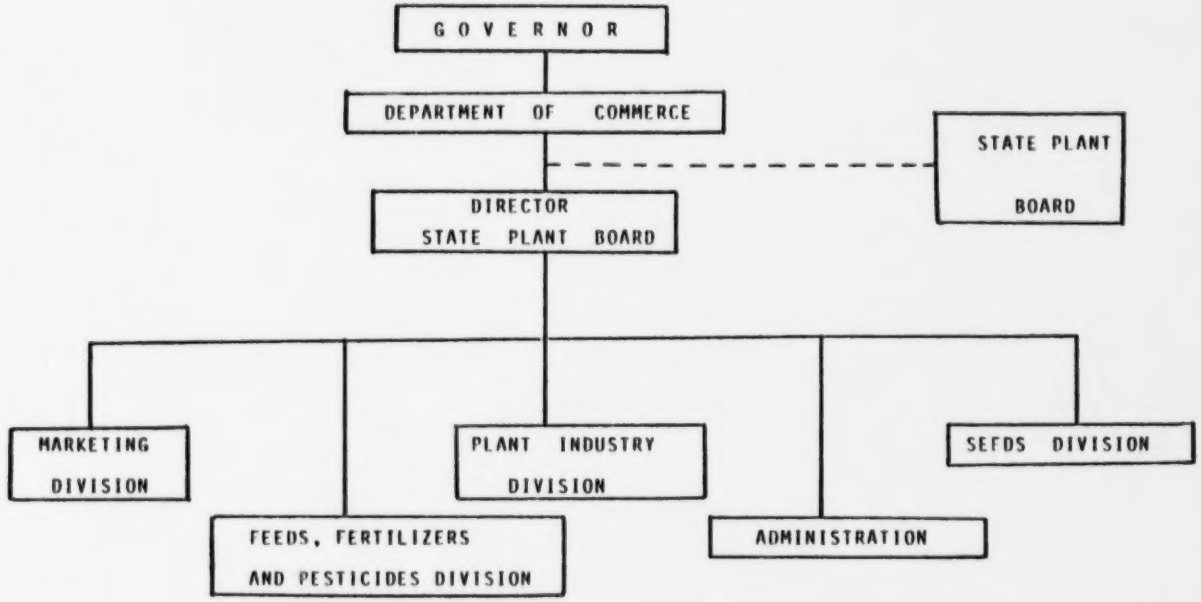
The Arkansas Plant Board has a 16 member Board which acts in an advisory capacity and makes rules and regulations. The Plant Board was created in 1917. Today, the Plant Board administers 15 laws. Pesticides related responsibilities are divided between the Feeds, Fertilizer and Pesticides Division, which is responsible for the administration of the Economic Poison Laws and the Agricultural Services Act, and the Plant Industry Division which is responsible for the Pest Control Licensing Law and various other quarantine and certification activities.

STATE OF ARKANSAS

DEPARTMENT OF COMMERCE

STATE PLANT BOARD

Figure 5 Organizational Chart



Pollution Control and Abatement Programs

I. AIR

A. Introduction

There are four major economic activities in Arkansas: agricultural, wood products operations, mineral processing, and petrochemical processing. All four of these activities contribute to air pollution problems in Arkansas in the form of excessive emissions of particulate matter such as smoke and dust. Major sources of air pollution are:

- Pulp and Paper: mills located in Ashdown, Crossett, Morrilton, Camden and Pine Bluff.
- Cotton: gins located in Eastern Delta; involve storage and burning.
- Wood: burning from wood products industries located in southern area of state.
- Asphalt: plants located across the state emit particulates in form of dust trough, drying process, storage and transportation.
- Ore: processing of ore throughout state; involves crushing, grinding, smelting, storage and transportation.
- Automobiles: emissions contribute 50% of the total air pollution in state.
- Open burning: salvage operations, agricultural burnoff, land-clearing, illegal dumps, located throughout state.

Although these sources may not be significant in themselves, collectively they can cause substantial air quality problems.

Arkansas is divided into Air Quality Control Regions (AQCR) as seen on the following page. As of 1975, the state began to utilize the high speed computer system of the University of Arkansas Medical Center to perform sophisticated atmospheric dispersion modeling.

Act 472 of 1949 as amended, the Arkansas Water and Air Pollution Control Act, Section 82-1931 states that it shall be the policy of the State ". . . to maintain such a reasonable degree of purity of the air resources of the state to the end that the least possible injury should be done to human, plant or animal life or to property and to maintain public enjoyment of the state's natural resources with the economic and industrial wellbeing of the state." Pursuant to this Act, the Arkansas Pollution Control Commission was established and is composed of ten members. Overall, the air responsibilities of the commission include:

- Development of a comprehensive program for prevention and control of air pollution.
- Advisory capacity to other agencies.
- Administer and enforce all laws and regulations.
- Represent the state in interstate negotiations.
- Adopt rules and regulations.

The Commission adopted and submitted a revised State Implementation Plan (SIP) for Air Pollution Control, in June, 1975. The revision weakened the applicability of the Air Code Standards to major sources of air pollution. The Air Code was based on a boundary line approach to measure air quality. This has been replaced, in accordance with the SIP, with specific emission limits on each source. Therefore, the Arkansas Air Code is now applicable only to minor sources.

B. Workforce Profile

Information pertaining to current and projected workforce has been obtained by means of on-site interviews and telephone conversations with state air pollution control and abatement personnel.

Under the Arkansas Water and Air Pollution, authority for the administration of the air quality program has been allocated to the Department of Pollution Control and Ecology, the Division of Air Pollution Control. There has been no responsibility delegated at the local level for air quality control.

The Division of Air Pollution Control is composed of three sections: the Engineering Section, the Field Services Section, and the Plans and Evaluation Section. These divisions of the workforce are illustrated on the page following Table I.

The following table depicts the current workforce levels.

TABLE I

DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Division of Air Pollution Control
Current (1976) Staffing Level

Position	(a)*	(b)*	(c)*	1976	%/annum turnover (average)
Pollution Control Chief	0	0	0	1	0%
Administrative Aide	0	1	1	3	**
Air Resources Specialist	0	5	0	5	15%
Pollution Control Technician	0	3	0	3	15%
Pollution Control Inspector	0	2	0	2	15%
Chemist	0	3	0	3	15%
Programmer	0	0	1	1	**
Meteorologist	0	0	1	1	15%
Environmental Engineer	4	0	0	4	15%

TABLE I

(continued)

Position	(a)*	(b)*	(c)*	1976	%/annum turnover (average)
Attorney	0	0	0	1	**
Secretarial	0	0	0	2	N/A
TOTAL	4	14	3	26	15%

* will not necessarily equal total
** unavailable
(a)Engineering Section
(b)Field Services Section
(c)Plans Evaluation Section

The personnel from the three Sections do not add up to the total figure. This is because the total figure includes administrative personnel as well as those persons assigned part-time to one or more of the categories.

The turnover rate is approximately 14% to 16% per annum and is a result of the salary schedules for state personnel which are considered to be low by comparison to neighboring states.

Responsibilities of the Engineering Section are quite extensive and include the following:

- Permit application review;
- Input to Emission Inventory System;
- Evaluation of control technologies;
- Source sampling assistance;
- Maintenance of current permits and registration of new facilities;
- Development of regulations.

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

DIVISION OF AIR POLLUTION CONTROL

ORGANIZATIONAL CHART

Figure 6

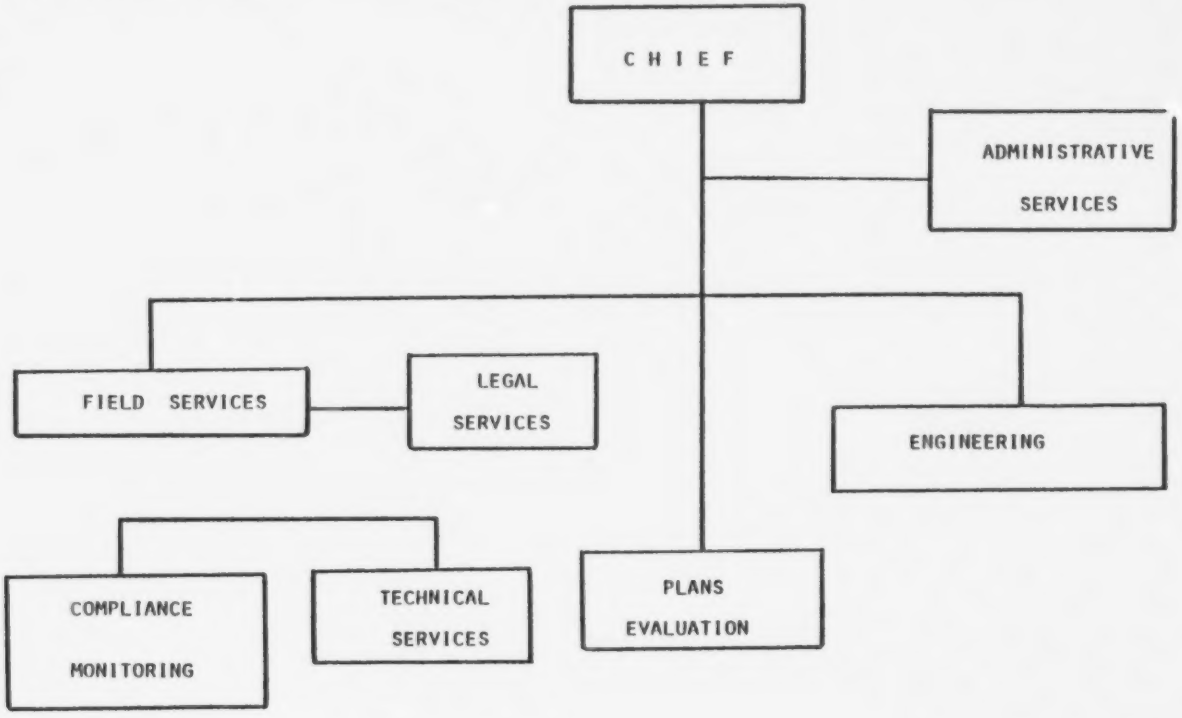
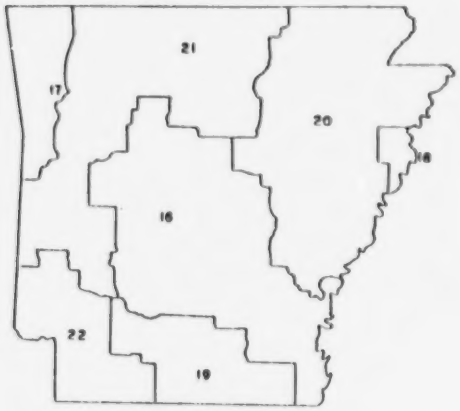


FIGURE 7

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Air Quality Control Regions &
Monitoring Network
1976

AIR QUALITY CONTROL REGIONS



PERMANENT HI-VOL SAMPLE STATIONS

Region 16		**Region 19**	
Russellville	1	Crossett	1
Conway	1	El Dorado	1
Jacksonville	1	Camden	1
No. Little Rock	1	**Region 20**	
Little Rock*	2	Jonesboro	1
Bryant	1	Blytheville	1
Pine Bluff	1	Forrest City	1
Arkadelphia	1	Helena	1
Hot Springs	1	Stuttgart	1
Dumas	1	Hardy	1
Region 17		Paragould	1
Springdale	1	**Region 21**	
Fayetteville	1	Harrison	1
Fort Smith	1	Oden*	1
Rogers	1	Mt. Home	1
Van Buren	1	**Region 22**	
Region 18		Hope	1
West Memphis*	3	Magnolia	1
Earle	1	Texarkana*	2

*EPA Stations

AIR QUALITY MONITORING NETWORK

• HI-VOLUME SAMPLERS
• GAS SAMPLERS

The Field Services Section maintains 44 permanent particulate and 14 gas sampling stations located across the state. Cotton gin compliance is an important component of this Section's activities. A major responsibility of this Section involves source surveillance and special studies are conducted across the Division under the aegis of the Field Studies Section.

The Plans and Evaluation Section is responsible for providing data processing support to the Division, as well as converting processed data into information which is supportive of the Division's enforcement activities. A major activities component involves simulation modeling for purposes of enforcement, permit reviews and control strategy development.

In the private sector of Arkansas, industry has organized the Arkansas Federation of Air and Water Users in order to inform the members of proposed revisions to existing environmental standards, and the establishment of new performance standards. The Federation represents the views of the membership at public hearings especially when proposed standards are under consideration.

The Federation has estimated that 200 to 250 people are involved in air abatement programs in the state.

C. Workforce Projections

The Division of Air Pollution Control presently is understaffed. New standards and increased responsibilities are anticipated. At least 10 additional positions are required to adequately execute these responsibilities. State budget limitations may adversely affect actual numbers

of new hires. The U.S. Environmental Protection Agency, through the state assignee program, may be able in some instances, to augment the staff.

The following table depicts estimated workforce requirements to 1982. These requirements are not allocated, herein, to the three Sections.

TABLE II

DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Division of Air Pollution Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Pollution Control Chief	1	1	1	1	1	1	0%	0%
Administrative Aide	3	3	3	3	3	3	**	0%
Air Resources Specialist	5	5	5	6	7	7	15%	8%
Pollution Control Technician	3	3	3	4	4	4	15%	7%
Pollution Control Inspector	2	2	2	2	2	2	15%	0%
Chemist	3	3	3	4	4	4	15%	7%
Programmer	1	1	1	1	1	1	**	0%
Meteorologist	1	1	1	1	1	1	15%	0%
Environmental Engineer	4	4	4	5	5	5	15%	5%
Attorney	1	1	1	1	1	1	**	0%
Secretarial	2	2	2	2	2	2	N/A	0%
TOTAL	26	26	26	30	31	31	15%	4%

** unavailable.

Authorities in the field anticipate an approximate four percent per annum increase in the private sector.

D. Training and Certification

The Division has instituted a program whereby an employee may take a leave of absence with 85% pay in order to return to the university for graduate study.

The field personnel are exposed to extensive one-to-one training on-the-job upon entering the Division. U.S. EPA courses are extensively offered in the area of air pollution control techniques. Personnel from the Division attend on a sporadic basis and in limited numbers. This is due, in part, to constraints of budget and time.

E. Career Potential

From the available information it appears that the professional field will increase at an annual rate of approximately three to five percent. The positions will be primarily at the degreed or higher levels in most situations, e.g., engineers, chemists, attorneys. Increased regulatory and control activities could diversify career opportunities and a substantial need may develop for individuals trained in short-term technical courses provided by either state or federal agencies. Similar courses might lead to careers as air pollution control aides and technicians, thereby providing the impetus for trainees to complete longer term study in specific academic programs. There is a significant need for air pollution education and research.

F. Conclusion

Arkansas' progress in air pollution control and abatement is impeded by a workforce which needs increasing. Clearer definition of "significant deterioration" regarding the federal Clean Air Act would necessitate additional increases in staff to those previously depicted.

The state utilizes an approach to improving the environment of maximum cooperation and conciliation. This results in improving not only environmental quality but the state's economic potential, as well.

II. NOISE

A. Introduction

Currently, there is no state agency in Arkansas which has been designated with the responsibility for noise pollution control and abatement. The major responsibility for environmental noise control has been allocated to the local level.

B. Workforce Profile

The state level workforce assigned noise pollution control and abatement responsibilities is non-existent at present. On the local level the workforce is predominantly composed of law enforcement personnel. However, estimates on the part of other Arkansas environmental control personnel state that approximately 20 persons statewide are involved in noise control on a full-time basis. Law enforcement personnel, of course, have other responsibilities aside from the noise field.

There are two municipalities in Arkansas which currently have noise ordinances. These are depicted on the table below.

TABLE III

STATE OF ARKANSAS

Municipal Noise Ordinances
(1976)

COMMUNITY		ORDINANCE								TOTAL		
		Aircraft	Building	Construction	Nuisance	Railroad	Vehicle	Rec./Vehicle	Zoning	a	b	
Pine Bluff					b					0	1	1
Little Rock					b					0	1	1
TOTAL	(a)	0	0	0	0	0	0	0	0	0	0	0
	(b)	0	0	0	2	0	0	0	0	0	2	2
		0	0	0	2	0	0	0	0	0	2	2

KEY: a = regulation includes acoustical criteria;
b = regulation does not include acoustical criteria.

SOURCE: Sound and Vibration, December, 1975. Ed.: Clifford R. Bragdon.

The designation of acoustical criteria refers to performance types of regulations. Ordinances which do not include acoustical criteria, as in the case of the above communities of Little Rock and Pine Bluff, are not quantifiable. These ordinances make enforcement very difficult.

C. Workforce Projections

As mentioned above, professionals in the environmental control field in Arkansas estimate that there are approximately 20 persons involved in noise pollution control and abatement activities. Industrial personnel have estimated that a seven percent per annum increase in noise control personnel will occur to 1982.

D. Training and Certification

Although there is little in the way of training in Arkansas in the noise field, the University of Tennessee Department of Otolaryngology and Maxillofacial Surgery will sponsor "Audiometric Orientation for Hearing Conservationists in Industry." This course has been widely publicized in the industrial sector. The course has the purpose of assisting industry in understanding problems of noise and its effects on hearing.

E. Career Potential

The career opportunities in the field of noise control in Arkansas are exceedingly limited. These options will continue to be quite scarce over the next few years. Career potentials are not expected to improve during this period.

Increased regulation and control of noise emission will require the development of particular courses and training programs for careers in this field. These training options most likely will develop at the technician level.

F. Conclusion

In view of the relatively recent development of noise pollution control as a distinct entity in the environmental control spectrum, activities, at least in Arkansas, are rather limited in scope. As previously pointed out, further regulation and increased public awareness will result in a continued need for specialists and for program development leading to more careers in the less than degreed technical areas. A number of upgrade/enrichment programs will also be needed as will appropriate staff for their implementation. In all, the field is expected to grow only minimally over the next two or three years to meet the mandates of new legislation and the requirements of new technologies as they pertain to noise pollution control. However, noise control will remain somewhat restricted for the next few years in terms of staffing levels.

III. PESTICIDES

A. Introduction

In Arkansas the State Plant Board, which is part of the Department of Commerce, has been designated as the state lead agency for the administration of the pesticides program. Several agencies cooperate with the Plant Board and include: Arkansas Cooperative Extension Service, Department of Pollution Control and Ecology, Arkansas Game & Fish Commission, State Department of Health, State Forestry Commission, and the University of Arkansas.

Legal authority for this program is contained in the Arkansas Pest Control Law (Act 488 of 1975), Arkansas Pesticide Control Act (Act 410 of 1975), Arkansas Pesticide Use and Application Act (Act 389 of 1975), Arkansas Regulations on 2, 4-D, 2, 4, 5-T and other hormone type herbicides of 1975.

B. Workforce Profile

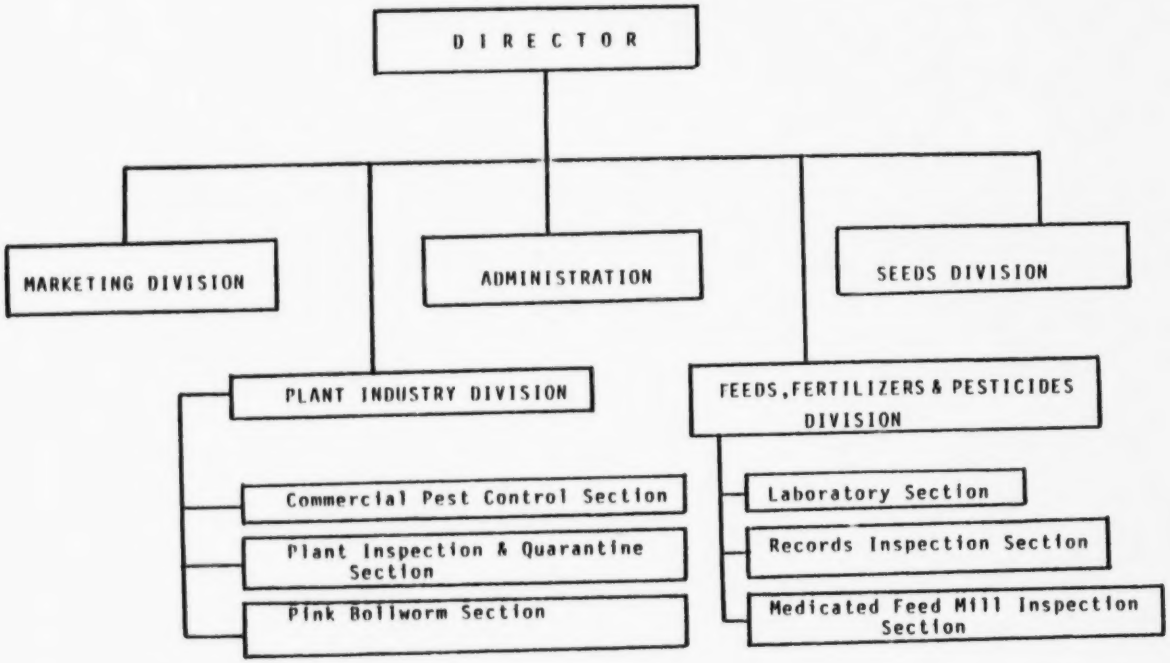
The Plant Board is composed of five divisions as illustrated on the following page. The major pesticides-related activities and responsibilities are allocated to the Plant Industry Division and to the Feeds, Fertilizer and Pesticides Division.

Information was obtained during on-site interviews for workforce profiles and projections. The table below details the pesticide workforce on the state level. An increase in pesticides related activities

A R K A N S A S

DEPARTMENT OF COMMERCE - STATE PLANT BOARD

Figure 8 Organizational Chart illustrating pesticides responsibilities.



has occurred over the last year for this staff. Personnel allocated 4,891 man-hours to pesticides as compared to 4,123 hours the preceding years.

TABLE IV

ARKANSAS STATE PLANT BOARD

Plant Industry Division
and
Feeds, Fertilizers & Pesticides Division
Current (1976) Staffing Level

Position	(a)*	(b)*	1976	%/annum turnover (average)
Director	0	0	1	0%
Manager (Divisions & Sections)	2	3	6	**
Chemist	0	2	7	10%
Pest Control Inspector	2	3	5	15%
Field Inspector Supervisor	**	**	6	15%
Field Inspector	**	**	19	18%
Inspector Helper	**	**	10	20%
Bookkeeper	1	1	2	**
Laboratory Technician			1	**
Chemist Intern	0	2	2	10%
Secretarial	2	2	5	N/A
TOTAL	7	13	64	N/A

* may not add up to total
** unavailable
(a) Plant Industry Division
(b) Feeds, Fertilizer and Pesticides Division

The Division of Plant Industry is composed of three Sections:

- Commercial Pest Control Section: licenses applicators, inspects property, investigates charges of illegal conduct, and licenses solicitors and agents working for licensed operators.

- Plant Inspection and Quarantine Section: inspects nurseries and plant shipments, certifies and enforces quarantives, conducts survey and detection programs in cooperation with U.S. Department of Agriculture (USDA).

- Pink Bollworm Section: enforces pink bollworm regulations as follows; maintains surveillance of roads for purpose of preventing infested materials from entering farms.

The Division of Feeds, Fertilizers and Pesticides is also composed of three sections with the following responsibilities:

- Chemical Laboratory Section: analyzes fertilizer, feed and pesticides to ensure quality; analyzes feed samples microscopically to determine ingredient composition and compliance with Feed law.
- Medicated Feed Mill Inspection Section: Involves the comprehensive inspection of the medicated feed mills to determine compliance with governing sections of Federal Food, Drug and Cosmetic Act.
- Records Inspection Section: audits books of dealers, manufacturers, and their agents.

The number of persons working in the field of pesticides in Arkansas has been estimated by Plant Board personnel to be 5,000 to 6,000. According to the State Pesticides Plan, there are approximately 20,000 farmers who will need to be certified for restricted-use pesticides.

C. Workforce Projections

Although the areas of responsibility are increasing rapidly insofar as pesticides registration and certification are concerned, there are few personnel increases which are anticipated for the State Plant Board. A two percent per annum growth is anticipated for this staff.

The pesticides personnel other than the private applicator (the farmer) should experience a three percent per annum increase to 1982. The 15% turnover rate as reported is anticipated to decrease somewhat.

D. Training and Certification

The staff attends, annually, several seminars and workshops. The Plant Board trains, tests and licenses pilots and operators-in-charge

of other applicators. Commercial applicators are also trained through the University of Arkansas, Cooperative Extension Service.

Training capabilities for instruction of applicators exist at University of Arkansas, Arkansas A & M, Arkansas State University, Arkansas Tech at Russelville and the Graduate Institute of Technology.

E. Career Potential

A number of disciplines which will necessitate varying technical skill competencies, as well as those which will require longer educational programs, will be needed. There will also be a need for professional level training in less specialized areas since pest control extends into the areas of water, solid waste and air.

F. Conclusion

Responsibilities and activities will increase for the state personnel. Very few increases in staff are seen at least for the next three years. For the most part, this is due to budgetary constraints. Continued federal funding of regulatory and training programs is essential to maintaining the present and future capabilities of the Arkansas Plant Board to meet federal regulations.

Career options in Arkansas in the pesticides field will not necessarily include the requirements of an academic degree. But, certification of restricted-use applicators will be enforced.

IV. POTABLE WATER

A. Introduction

Arkansas is a water rich state with five major rivers including the Mississippi. Scores of small streams and lakes, as well as innumerable waterfalls, contribute to the state's water resources. Overall, drinking water is considered to be of good quality.

Currently, the state has over 550 public water supply systems, the majority of which are defined as municipal. Arkansas has estimated that by 1982 these systems will number in excess of 2,000. Changes in designation and classification of water systems is occurring due to the impact of PL 93-523, the Safe Drinking Water Act.

B. Workforce Profile

Pursuant to Arkansas state law, the Department of Health, Bureau of Public Health Engineering has been designated as the agency with primary responsibility for drinking water in Arkansas. Information regarding workforce profile and projections was determined as the result of on-site interviews and telephone follow-up conversations.

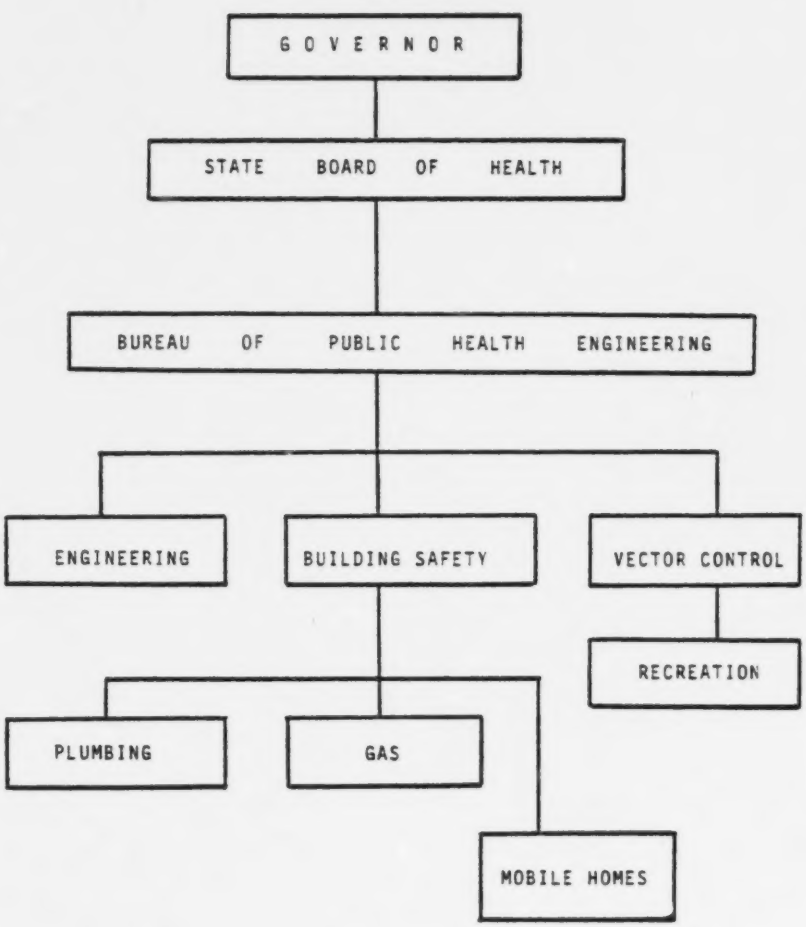
The Bureau of Public Health Engineering, illustrated on the following page, is composed of three major sections which include:

- Engineering;
- Building Safety; and
- Vector Control.

ARKANSAS BOARD OF HEALTH

BUREAU OF PUBLIC HEALTH ENGINEERING

FIGURE 9 ORGANIZATIONAL CHART



The Bureau of Public Health Engineering is responsible for administering and enforcing the state and federal requirements for safe drinking water supplies. In addition, this Bureau conducts the training and administers certification testing of water treatment and distribution plant operators. The Engineering and Building Safety Sections presently are composed of 12 engineers and 14 plumbing inspectors with secretarial and administrative support.

In addition, allocations are made to the laboratory section of the Bureau of Environmental Health Services, for analysis and evaluation of samples. The following table details the current staffing levels of the drinking water workforce.

TABLE V

ARKANSAS DEPARTMENT OF HEALTH

Potable Water Personnel
Current (1976) Staffing Level

Position	(a)	(b)	1976	%/annum turnover (average)
Director	1	0	1	0%
Engineer	12	0	12	5%
Plumbing Inspector	14	0	14	5%
Microbiologist	0	2	2	5%
Chemist	0	1	1	3%
Laboratory Aide	0	2	2	6%
Secretarial	2	0	8	N/A
TOTAL	29	5	40	N/A

(a) Bureau of Public Health Engineering, Engineering Section and Building Safety Section
(b) Bureau of Environmental Health Services, Environmental Laboratory Section

Currently, the plant operating personnel has not been categorized into number of operators per classification. This is due primarily to an absence of a data processing section in the Bureau. But, estimates have been made as to the statewide potable water workforce. There are approximately 750 certified operators in three classification categories. The turnover rate in the operator field has been reported at 10% to 15% per annum.

C. Workforce Projections

The Safe Drinking Water Act, P.L. 93-523, provides for federal assistance to state drinking water programs. Accordingly, the Bureau of Public Health Engineering anticipates staff increases in the form of engineer technicians and administrative assistants. The laboratory section will experience an increase in positions. There is a demonstrated need for a data processing section to compile statistics on public water supplies and operators. This Bureau anticipates additional personnel to fulfill this function.

There will be expansion in the numbers of water plant operators over the next five years. A 5% per annum growth rate is anticipated to 1982.

The turnover rate in the Bureau is quite stable although an occasional engineer is lost to a consulting firm. The turnover rate for operators will continue at 15% due to low salaries. The political aspects of the small community influences this rate also. When a new mayor is elected, often the supervisory operator is removed and replaced by a political supporter.

The following table details the state workforce requirements to 1982.

TABLE VI

ARKANSAS DEPARTMENT OF HEALTH

Potable Water Personnel[1]
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Director	1	1	1	1	1	1	0%	0%
Engineer	12	12	17	20	22	22	5%	14%
Engineer Technician	0	0	3	6	6	6	**	20%
Inspector *	14	14	14	14	14	14	5%	0%
Microbiologist *	2	2	3	3	3	3	5%	10%
Chemist *	1	1	2	3	3	3	3%	30%
Laboratory Aide *	2	2	2	2	2	2	6%	0%
Data Processing	0	0	1	2	2	2	**	20%
Secretarial	8	8	8	8	8	8	N/A	0%
TOTAL	40	40	51	59	61	61	N/A	9%

* Laboratory personnel.
** unavailable
1 Includes: Bureau of Public Health Engineering, Engineering Section and Building Safety Section; and, Bureau of Environmental Health Services, Environmental Laboratory Section.

The current number of water treatment and distribution plant personnel has been approximated at 750. The following table, while not divided into classification categories, estimates the per annum expansion in this occupational field in Arkansas.

TABLE VII

STATE OF ARKANSAS

Water Treatment & Distribution Plant Personnel
Certified Operators
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Certified Water Treatment & Distribution Plant Operator Class I,II, & III Summary	750	787	826	867	910	912	13%	4%
TOTAL	750	787	826	867	910	912	13%	4%

D. Training and Certification

In cooperation with the Arkansas Water Works and Pollution Control Association, the Bureau of Public Health Engineering conducts meetings on a monthly basis for purposes of training. These meetings are held one in each of eight districts across the state. Additionally, there is a major Arkansas Water Works and Pollution Control Association Conference which is held annually with the training of operators and certification examination testing as the predominant emphasis. District training is accomplished pursuant to a request made to an engineering representative of the Bureau. These requests for training result in the engineering staff conducting a 2 1/2 day seminar or short school.

The Bureau of Public Health Engineering conducts an average of 24,000 man-hours of training annually.

The certification examination was administered to 350 persons during the past year. Of this total, approximately 150 were new entrants and/or upgrading their certification classification.

E. Career Potential

Career opportunities should be available at the degreed and non-degreed level. Operators will require increasing knowledge and skills as water treatment and distribution plants become more technologically complex.

F. Conclusion

The State of Arkansas will need additional personnel to conduct the drinking water program properly. The state has indicated intentions of assuming primary enforcement responsibilities for the Safe Drinking Water Act, P.L. 93-523. The assumption of "primacy" will require additional laboratory and data processing personnel as indicated in Section C, entitled "Workforce Projections."

Water treatment and distribution plant operating personnel will experience an approximate 25% increase in overall numbers during the next five years. This may entail additional training personnel.

It would appear that the primary problem relative to increases in state staff are in the area of salary. The salary scales are ordinarily the hindrance to acquiring properly trained new entrants. The problem may be compounded if the positions are allocated by the legislature but

not filled. This may result in an overall reduction of positions allocated during subsequent budgetary and personnel determination meetings.

Operating personnel will continue to experience high turnover rates until salaries and upward mobility as well as job security are improved. These problems, however, are not unique to Arkansas. Upgrade training will be a necessary requisite for operators in the next three to five years as increased technological advances are developed and implemented in plants across the state.

V. RADIATION

A. Introduction

Radiation control is not new to the State of Arkansas. In 1963, Arkansas became one of the earliest states with "agreement" status. This term refers to an agreement entered into by the state and the Nuclear Regulatory Commission (NRC). Under the terms of the agreement, certain responsibilities of the Commission are allocated to the state. This occurs under Section 274 of the Atomic Energy Act of 1954.

Radiation legislation during the calendar year 1975 involved the promulgation of House Bill 1659 regarding nuclear energy. Prior to this time, the enabling Act 8 was passed in 1961 as amended by House Bill 447 in 1971. Arkansas also has specific statutes for control of nonionizing radiation which includes all electromagnetic radiation.

B. Workforce Profile

The Arkansas Department of Health, Bureau of Environmental Health Services, Radiological Section has been designated as the state lead agency for radiation control. The program includes several major areas of involvement. As an agreement state, Arkansas must conduct inspections of licensed facilities every two years. The Radiological Section responsibilities are categorized into medical/dental X-ray activity, non-healing arts X-ray, and particle accelerators.

The medical/dental X-ray program is regulatory as in most states (as compared to voluntary). The following details overall activities in the state during fiscal year 1975.

TABLE VIII

STATE OF ARKANSAS

X-Ray Program Activities - FY 1975

Dental		
Number of Dental X-Ray Machines		976
Number in compliance		848
Medical		
Number of Medical X-Ray Machines		1,347
Hospitals	491	
X-Ray Trucks	0	
Physicians	463	
Chiropractors	83	
Veterinarians	58	
Podiatrists	8	
Other	244	
Number in compliance		1,216
Non-Healing Arts		
Number of Facilities Using X-Ray		9
Number Using Radiographic/Fluoroscopic		10
Number Using Analytical X-Ray		10
Number in compliance		24

SOURCE: Report of State & Local Radiological Health Programs, DHEW-FDA, 1976.

Since 1973, the total state staff assigned to radiation control has declined somewhat. This year (1976), however, the state program was reorganized. The table below details the staff of the Department of Health Radiological Section.

TABLE IX

ARKANSAS DEPARTMENT OF HEALTH

Bureau of Environmental Health Services
Radiological Health Personnel
Current (1976) Staffing Level

Position	(a)	(b)	(c)	1976	%/annum turnover (average)
Director	1	1		2	0%
Electronics Technician	1			1	40%
Radiation Defense Supervisor	1			1	5%
Supervisor			4	4	5%
Chemist			12	12	3%
Health Physicist		5		5	5%
Emergency Medical			1	1	2%
Service Specialist			1	1	40%
Lab Technician			2	2	40%
Secretarial	2	1	3	6	N/A
TOTAL	5	7	23	35	N/A

(a) Bureau staff (part-time)
(b) Radiological Section
(c) Laboratory (part-time)

The turnover rate in the Health Department in some areas is as high as 60%. In the management and administrative categories it is almost zero.

The total statewide number of persons occupationally involved in radiation control has been estimated by Health Department officials to be approximately 500. These include the following occupations: health physicist, nuclear medical technologist, radiologist, physicist, chemist, and radiation biologist.

C. Workforce Projections

A three to five percent growth per year can be expected at both the state and private sector. Two more positions will be added to the laboratory this year. Within the next two years, eight more positions will be filled; the majority of which will be chemists and lab technicians.

The following table depicts the projected workforce requirements to 1982 for the radiation personnel of the Health Department.

TABLE X

ARKANSAS DEPARTMENT OF HEALTH

Bureau of Environmental Health Services
Radiological Health Personnel
Workforce Projections to 1982 (est.)

Position	1976*	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Director Radiation Defense Supervisor	1	1	1	1	1	1	0%	0%
Supervisor	1	1	2	2	2	2	5%	20%
Chemist[1]	4	4	4	4	4	4	5%	0%
Health Physicist	12	13	14	15	15	15	3%	5%
Lab Technician[1]	5	5	6	6	7	7	5%	8%
Secretarial[2]	2	3	4	5	6	6	40%	26%
	4	4	4	5	5	5	N/A	5%
TOTAL	29	31	35	38	40	40	N/A	7%

* Does not include Bureau Staff (part-time) with exception of Radiation Defense Supervisor

[1] Laboratory (part-time).

[2] Includes Laboratory personnel.

The private workforce will experience a seven to ten percent per annum increase according to the best professional judgements in the field.

The majority of this workforce will be composed of medical/dental and non-health x-ray personnel.

D. Training and Certification

Health physicists and other selected personnel are, upon occasion, permitted to attend a ten week course conducted at Oak Ridge, Tennessee and sponsored by the Nuclear Regulatory Commission (NRC). These are also attended on a limited basis due to budgetary constraints.

A system has been established whereby an employee, after three years, may return to school for graduate study. The Bureau contributes 85% of the salary plus tuition and fees. The employee must, however, return to the Bureau for a prearranged period of time.

E. Career Potential

Career opportunities will be available at the state level and also to a greater degree within the private sector in industry. Academically trained personnel with a college degree in the engineering and science fields will define the largest percentage of the occupational categories which should be available to 1982. Radiation and nuclear expertise as well as computer training will represent some of the job skills which will be in demand in Arkansas.

F. Conclusion

Increased coordination between the industrial, state level and university sectors will be necessary in the future in Arkansas regarding

academic preparation for radiation careers. Graduates, particularly physicists and engineers, are prepared with traditional science curriculum. With this background, the new employee is unable to respond to the needs of the state's program, especially regarding instrumentation.

The state program is in need of increased staffing and have submitted a priority request list. Salary scales remain the major hindrance to additional staff, as positions are allocated but not filled.

VI. SOLID WASTE

A. Introduction

The Arkansas Solid Waste Management Act was passed in 1971. But, the state has had a solid waste management program since 1968.

Currently, there are 99 sanitary landfills across the state which have been issued permits by the state. Of the 99 landfills, 85 sites have an active incinerator.

Solid waste is a problem in Arkansas which requires the efforts of public relations and educational personnel to inform the citizenry regarding health and environmental hazards. State personnel feel there are still far too many examples of private citizens disposing of garbage at the end of a dead-end street or out in the country. Great strides have been made however, since 1968, in the area of solid waste management in Arkansas.

B. Workforce Profile

The Department of Pollution Control & Ecology, Division of Solid Waste Control, has been designated as the lead agency for the State of Arkansas solid waste management program. The Division administers the program under the Arkansas Solid Waste Management Act of 1971. Currently, the Division has designated responsibilities in five program areas as seen on the following pages in the organizational charts. These program areas include:

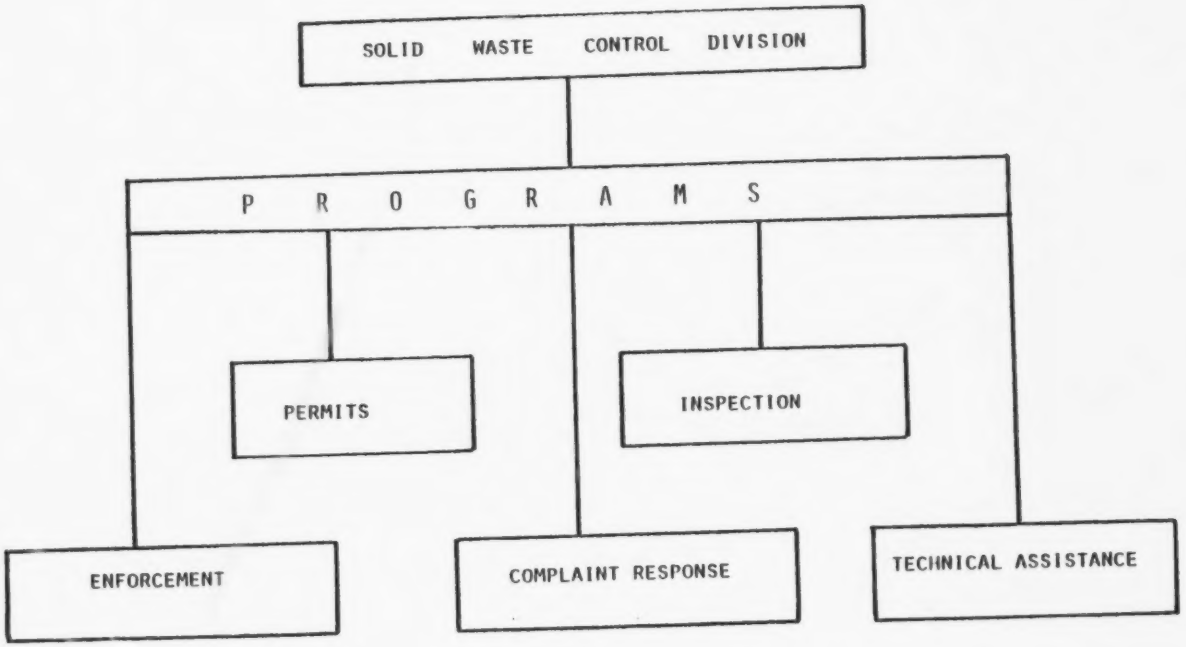
- Permits;
- Enforcement;

A R K A N S A S

DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

DIVISION OF SOLID WASTE CONTROL

Figure 10 Organizational Chart

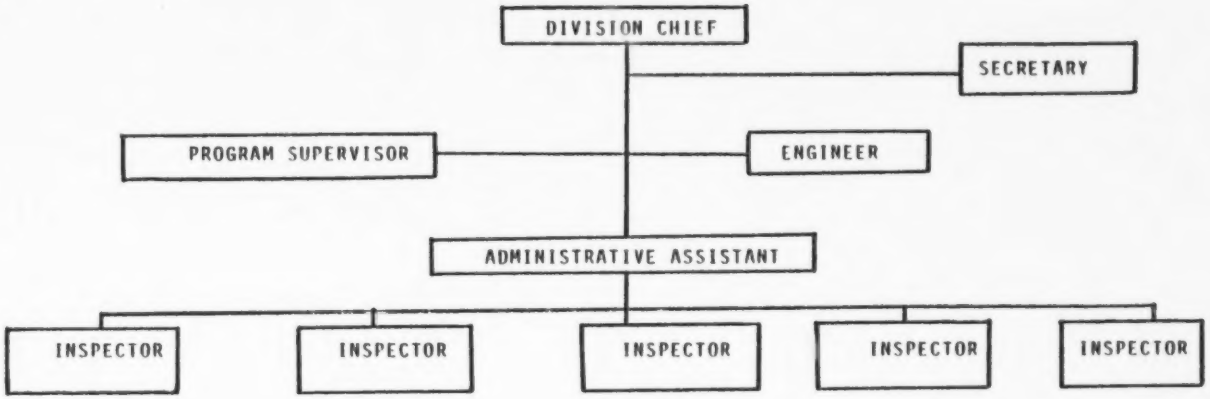


STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

SOLID WASTE CONTROL DIVISION

Figure 11 ORGANIZATIONAL CHART



- Inspection;
- Complaint Response; and
- Technical Assistance.

The Permits responsibilities include the issuance of permits for sanitary landfills to private or public operators.

The Enforcement section began a more strict interpretation of the Act beginning in 1974. Subsequently, several communities have been involved in court actions. Currently, the Division is beginning with the larger cities and working down to the smaller communities in an effort to gain statewide compliance with the Act.

The Inspection and Complaint Response are involved in monthly inspections of permitted facilities to determine compliance with current regulations. Complaints are received on a daily basis by the Division. Each valid complaint must be investigated. Legal action can be pursued to check violations.

The Technical Assistance section has routine conferences with municipal officials and facility managers and operators. This section conducts seminars and training which will be addressed in Part D, entitled "Certification and Training."

The following table details the current staffing level of the Division of Solid Waste Control. Information regarding the current and projected workforce staffing levels was retrieved during on-site interviews with Division personnel.

TABLE XI

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Division of Solid Waste Control
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Division Chief	1	0%
Administrator	2	5%
Inspector	4	10%
Secretarial	1	N/A
TOTAL	8	N/A

The Department of Health, Bureau of Public Health Engineering, contributes technical assistance to the Solid Waste Control program in the form of four public health inspectors.

Solid waste management personnel statewide number approximately 650 to 660 according to experts in the field.

TABLE XII

STATE OF ARKANSAS

Solid Waste Management Personnel
Current (1976) Staffing Level
(estimated)

Position	1976	%/annum turnover (average)
Municipal landfill site personnel	600	15%
Industrial personnel	55	12%
TOTAL	655	13.5%

C. Workforce Projections

The state level solid waste management program should experience increases in staffing levels to 1982. Training and data processing are two areas which require personnel.

The following table details projected workforce requirements to 1982.

TABLE XIII

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Division of Solid Waste Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Division Chief	1	1	1	1	1	1	0%	0%
Administrator	2	2	2	2	2	2	5%	0%
Inspector	4	4	4	4	4	4	10%	0%
Training Officer	0	0	1	2	2	2	*	20%
Geologist	0	1	1	1	1	1	*	20%
Data Processing	0	1	1	1	1	1	*	20%
Engineer	0	1	2	2	2	2	*	20%
Secretarial	1	1	1	1	1	1	N/A	0%
TOTAL	8	11	13	14	14	14	N/A	13%

* Unavailable.

Heavy equipment operators and landfill supervisors will experience a five percent per annum growth as new federal legislation is implemented. Turnover rates of 15% are described as common to landfill operators in the state. Poor salaries are the major contributor to this turnover rate. However, the solid waste field maintains the highest accident rate of any occupational category. This, added to the fact that the work is

described as less than glamorous, contributes to high turnover rates. The following table illustrates the projected workforce requirements statewide to 1982.

TABLE XIV

STATE OF ARKANSAS

Solid Waste Management Personnel
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Municipal landfill personnel	600	630	661	694	729	765	15%	5%
Industrial personnel	55	57	60	63	66	70	12%	5%
TOTAL	655	687	721	757	795	835	13.5%	5%

D. Training and Certification

Training for solid waste personnel in Arkansas is described as presently inadequate. There are federal funds available with which to train landfill operators. These efforts involve a two-day short course conducted at a local vocational school. Grants from the Department of Labor are also available for training. Attendance, however, is poor because personnel are unable to take three days leave from work.

The Solid Waste Control Division attempts to remedy this situation by assigning training personnel to the various sites. However, lack of funds and staff preclude extensive training efforts.

No certification exists for solid waste personnel in Arkansas. Certification would be advantageous insofar as safety is concerned. Certification of personnel is a possibility, but not for several years in Arkansas.

E. Career Potential

There are a number of fields requiring both technical and professional level training which may develop in the future as solid waste activities become more diversified and complex. These positions will be a consequence of the Resource Conservation and Recovery Act, and, to a lesser extent, the ramifications of the Toxic Substances Act. The preceding, and other legislation will require engineers, geologists, computer specialists, and technicians trained in materials handling, and complex machinery operation and maintenance, as well as additions to the current solid waste collection and disposal staff, e.g., drivers, operators of landfills and heavy equipment.

The degree of growth in the solid waste field will, of course, depend on available budget, federal support and the speed with which legislative mandates are to be met.

F. Conclusion

The solid waste management state level program staff needs increases in the professional ranks in the form of geologist, training officer, data processing personnel and engineering expertise. But, salaries, as in other state programs, present the major hindrance to acquisition of new personnel and to maintaining a low turnover rate. Legislatively, the positions are available, but the workforce to fill the needs seems illusive.

Great strides have been made in the State of Arkansas since the late 1960's when the solid waste management concepts were chosen as the direction in which the state wished to proceed relative to disposition of refuse and other wastes.

Arkansas has one solid waste transfer station in the City of Newport. This city has a population of 7,725 and has been operating the transfer station since June, 1976. Collection vehicles deliver garbage directly to the transfer station where the wastes are loaded into a 75 cubic yard capacity tractor-trailer unit. The trailer then carries one load per day from the city to a sanitary landfill located approximately 14 miles from Newport.

At the landfill, the wastes are covered at one time which reduces the amount of equipment needed and person hours.

The City of Newport chose the transfer station option due, predominantly, to geological factors which limited the establishment of their own sanitary landfill.

Currently, the city generates 15 tons of waste per day. The transfer station, however, has the capacity to facilitate 250 tons per day. The city is presently considering allowing some of the neighboring cities to share in this venture which would substantially contribute to reduced operating expenses.

Thus, in less than ten years, Arkansas has established innovative responses to solid waste challenges to public health and environmental well-being.

VII. WASTE WATER

A. Introduction

Arkansas waters may be described as of exceedingly high quality on one hand and highly degraded on the other. Usually these variations are attributable to the geographic region of the state. The waters in some mountain areas, like the Ozarks and Ouachitas, are supportive of fish life and inviting to recreating tourists and residents. The Eastern Delta area, representative of the other end of the spectrum, offers creeks, bayous and rivers which are laden with silt and highly laced with herbicides and pesticides due to agriculture runoff.

The major water pollution sources in Arkansas are described as follows:

- Municipal waste water containing sewage as well as industrial wastes;
- Oil and saltwater discharges from oil fields across the state;
- Agricultural runoff containing silt, pesticides and herbicides;
- Organic wastes from canneries, slaughter houses, poultry processors and dairy companies;
- Industrial wastes resulting from chemical plants, paper mill, metal working factory, oil refinery and metal extraction plant activities;
- Washing discharges from gravel and mineral processing; and
- Acid water from open-cut mining.

The Arkansas Water and Air Pollution Control Act allows no waste discharges into the states waters without a permit. Permits must be

obtained through the designated agency. In order to receive a permit, the applicant must prove that no violations of Arkansas water quality standards will occur. Included in the standards are identified parameters such as:

- acidity and alkalinity;
- minerals;
- toxic substances;
- temperature;
- oxygen;
- color; and
- odor.

At the same time the federal requirements inherent in the Water Pollution Control Act Amendments of 1972 (P.L. 92-500) must be met.

B. Workforce Profile

Primary responsibility for waste water has been allocated to the Department of Pollution Control & Ecology, Division of Water Pollution Control. The Division is composed of six major program sections as may be seen on the following page. These sections include:

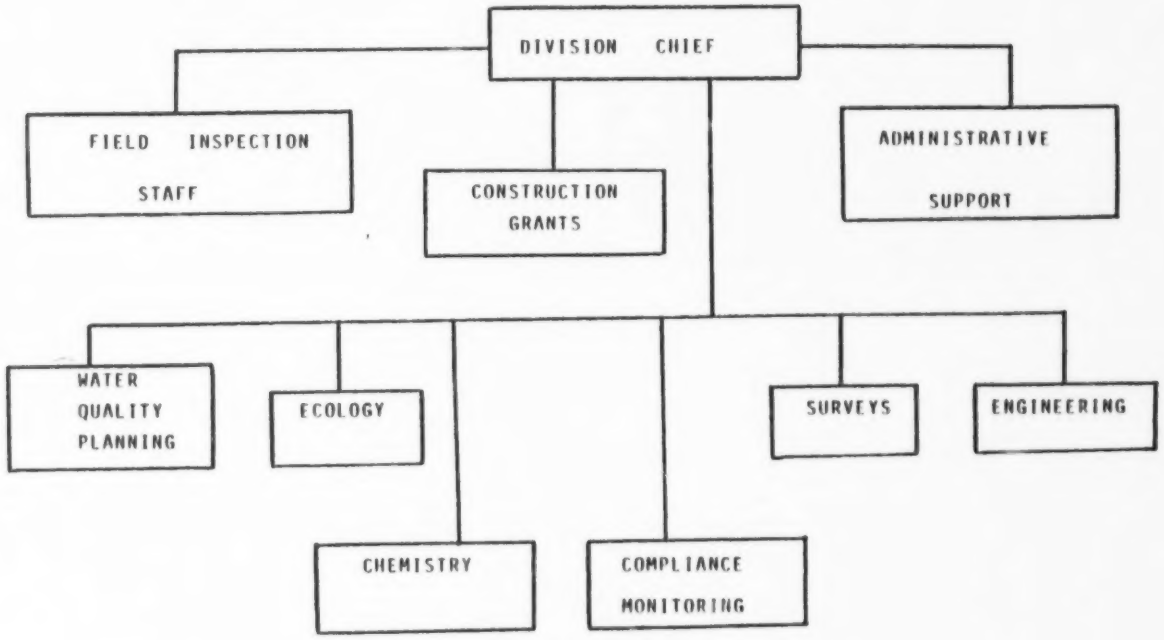
- Water Quality Planning;
- Ecology;
- Chemistry;
- Surveys;
- Compliance Monitoring; and
- Engineering.

STATE OF ARKANSAS

DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

DIVISION OF WATER POLLUTION

Figure 12 ORGANIZATIONAL CHART



The Water Quality Planning Section is responsible for three program elements: the preparation of annual Water Quality Management Program Plan; Basic Plans consisting of the preparation of management documents which identify water quality problems and describe improvement strategies; and the Section 208 of the Federal Water Pollution Control Act which addresses nonpoint sources of pollution, such as acid mine drainage and soil runoff.

The Ecology Section conducts river basin surveys; biological and bacteriological stream monitoring; fish kill investigations; bioassay studies; and special problem studies.

The Chemistry Section is responsible for laboratory support in a central office laboratory and in a mobile field trailer laboratory.

The Surveys Section is responsible for conducting statewide surveys relative to water pollution control and abatement.

The Compliance Monitoring Section conducts monitoring activities to ensure that compliance standards are being maintained.

The Engineering Section reviews permit applications and plans for waste water treatment plant facilities; conducts special surveys; and acts in a consulting capacity in allocating technical assistance to municipalities, industries and individuals.

The following table details the current workforce staffing levels for the Division of Water Pollution Control. Information pertinent to current and projected workforce descriptions was obtained through on-site and telephone interviews with Department of Pollution Control & Ecology personnel.

TABLE XV

ARKANSAS DEPARTMENT OF POLLUTION CONTROL

Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Field Inspector	10	5%
Water Resource Technician	4	5%
Pollution Control Ecologist	4	5%
Chemist	5	5%
Compliance Monitor	3	8%
Environmental Engineer	3	20%
Planning Specialist	1	10%
Pollution Control Engineer	2	20%
Secretarial	4	N/A
TOTAL	36	

In FY 1975, the Division developed a priority ranking system for allocating federal funds to municipalities for the construction of waste water treatment plant facilities. This system was intended to satisfy the greatest needs with a limited amount of funds appropriated by Congress to help Arkansas meet the requirements of the Federal Water Pollution Control Act Amendments of 1972. A total of 62 cities were classified in the priority system for fiscal year 1975. Each city was accorded points for population, severity of pollution problems, and requirements to preserve high quality waters. Each grant required approval of the Environmental Protection Agency.

The Division is responsible for the training and certification of waste water treatment plant operators, as well as assisting EPA in preparing discharge permits pursuant to the National Pollutant Discharge Elimination System (NPDES).

Although the precise number of certified waste water treatment plant personnel has not been indicated, professionals in the field estimate that approximately 1,000 people are involved in 210 municipal waste water treatment plants; and 300 to 350 people are occupationally associated with industrial waste water treatment plant operations.

C. Workforce Projections

Presently, it is estimated that growth within the Division of Water Pollution Control will approximate five percent per annum over the next five years. There are approximately 15 vacancies currently within the Division. The vacancies are in addition to those figures presented in the current staffing level table. Turnover within the Division is approximately 5% to 10% on the technical level. Engineers experience a turnover rate of approximately 20% due to low salary scales.

The following table illustrates the projected workforce requirements to 1982 for the Division of Water Pollution Control.

TABLE XVI

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Division of Water Pollution Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Field Inspector	10	10	10	10	10	10	5%	0%
Water Resource Technician	4	5	5	5	5	5	5%	5%

TABLE XVI

(continued)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Pollution Control Ecologist	4	4	4	5	6	6	5%	9%
Chemist	5	5	5	5	6	6	5%	4%
Compliance Monitor	3	3	3	3	3	3	8%	0%
Environmental Engineer	3	4	4	5	5	6	20%	16%
Planning Specialist	1	1	2	2	2	2	10%	20%
Pollution Control Engineer	2	2	3	3	3	3	20%	10%
Secretarial	4	4	4	4	4	5	N/A	5%
TOTAL	36	38	40	42	44	46	N/A	5%

Growth at the operator level will approximate four percent per annum. Industrial waste water treatment plant operators, however, will experience a three percent per annum increase according to the Arkansas Federation of Air and Water Users.

The following table details the anticipated expansion among waste water treatment plant personnel. The table does not differentiate classification categories, however.

TABLE XVII

STATE OF ARKANSAS

Waste Water Treatment Plant Personnel
Certified Personnel Including Supervisors
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Municipal Waste Water Treatment Plant Personnel	1000	1040	1081	1124	1168	1215	15%	4%
Industrial Waste Water Treatment Plant Personnel	325	335	345	362	373	384	12%	3%
TOTAL	1325	1375	1426	1486	1541	1599	13.5%	4%

D. Training and Certification

Training of waste water treatment plant personnel is accomplished by means of several options. The Arkansas Department of Pollution Control and Ecology maintains a Training Officer who conducts the training of personnel. The following table details various training options which are available to municipal and industrial plant staff members as well as new entrants to the field of waste water treatment.

TABLE XVIII

STATE OF ARKANSAS

Waste Water Training Programs

SPONSOR	LENGTH	PROGRAM
DPC & E	3 days	Utility equipment maintenance (pumps & lift stations)
Texas A & M University	3 days	General waste water treatment techniques
DPC & E	100 hours (5 days/week for 4 weeks) (conducted six times annually)	Waste water treatment
DPC & E	3 days	Anaerobic Decomposition
DPC & E	72 hours	Package Treatment Plants
AWW-PCA	4 days	Annual Conference
DPC & E	3 days	Activated Sludge
DPC & E	3 days (conducted three times annually)	Basic Math and laboratory techniques
DPC & E	72 hours	Oxidation Ponds; Math and laboratory techniques
DPC & E	160 hours	Wastewater Treatment

E. Career Potential

Careers will be available at the state level. Also, at the municipal level and in the industrial sector, operators will be required.

Waste water treatment plant personnel will require increasing upgrade training over the next five years as technological advances are made in treatment techniques.

F. Conclusion

Statewide water pollution control and abatement programs include identification of sources and determination of strategy plans to eliminate current problems and to prevent future degradation. Overall, the pollution of Arkansas waters may be considered a reversible process. Application of waste water treatment to municipal and industrial point source discharges and curtailment of non-point source discharges are the major components of the state's abatement program. Strict enforcement through education and surveillance will prevent future degradation of the state's waters.

The Division of Water Pollution Control is currently understaffed. To fulfill the designated responsibilities, vacancies should be filled as well as additional staff allocated. High number of vacancies is due substantially to salaries which result in high turnover rates. Coordination of planning, increased salaries, and additional engineering staff would alleviate many of the problems related to conducting an efficient and effective program of water pollution control and abatement.

VIII. ENERGY

A. Introduction

Numerous energy companies are exploring possibilities of developing the vast lignite resources in the State of Arkansas. There are many pollution control aspects to be considered prior to the development of these resources, however. Land reclamation is an uppermost consideration in maintaining the ecological balance of the state. Lignite mining in Arkansas will increase the problems of flood control and preparation of soil prior to reclamation. Land use planning will be an essential component in Arkansas' future development.

According to the Bureau of Mines publication, Projects to Expand Fuel Sources in Western States, U.S. Department of Interior, May, 1976, there are several proposed energy development projects planned for Arkansas. One coal mine, five electric power plants and one natural gas processing plant are listed in this publication. Preliminary assessments have been completed regarding the quantity and quality of the state's lignite reserves located in the southwestern quadrant of Arkansas. Upon becoming a reality, lignite development will decrease Arkansas' dependency on imported Wyoming coal. Energy projects proposed for the future may be seen on the following page.

B. Workforce Profile

There are two offices in Arkansas with energy-related responsibilities. The Arkansas State Energy Office and the Department of Pollution Control

Figure 13 ARKANSAS: FUELS RELATED PROJECTS

SOURCE: Projects to Expand Fuel Sources in Western States, Bureau of Mines, Information Circular, May, 1976.

and Ecology have been identified for purposes of this study. Workforce profiles for current and projected staffing are the result of information retrieved during on-site and telephone interviews.

The Arkansas State Energy Office has as its major purpose the development of an energy policy for the state. This agency also coordinates their activities with other state Departments in an effort to ensure the wise allocation of energy expenditures. Other specific responsibilities and functions involve the assessment of energy use in the state by geographic area for purposes of forecasting; the development of alternative energy programs; and, the accurate recording of the supply, distribution and consumption components of the state's energy resources.

The current staffing levels are illustrated in the following table.

TABLE XIX

ARKANSAS STATE ENERGY OFFICE

Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Director	1	0%
Petroleum Allocation Officer	2	0%
Energy Conservation Officer	3	0%
Secretarial	3	N/A
TOTAL	9	N/A

There is no turnover rate, as yet, due to the recent establishment of the agency.

The Department of Pollution Control and Ecology maintains an Environmental Preservation Division which is primarily responsible for proposing

recommendations regarding major projects which are planned for the state. These projects include river channelization, nuclear power plant construction as well as others. Another responsibility allocated to this Division is the reclamation of open-cut mined land. No open-cut mining may be conducted in the state without a permit which is issued by this Division. The following table depicts acreage currently under reclamation in Arkansas.

TABLE XX

STATE OF ARKANSAS

Acreage Under Reclamation

Product	Acreage
Bauxite	178.0
Clay	11.0
Coal	766.0
Vanadium	20.0
Gypsum	51.0
TOTAL ACREAGE	1,026.0

SOURCE: Arkansas Department of Pollution Control & Ecology.

Extensive review activities regarding Environmental Impact Statements are another area of endeavor allocated to this Division. Most of the technical review, however, is conducted by the Department's air and water division personnel.

The following table depicts the current staffing levels of the Division.

TABLE XXI

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Environmental Preservation Division
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Director	1	0%
Secretarial*	1	N/A
TOTAL	2	N/A

* Part-time.

Although the responsibilities and activities of this Division are extensive, the Director is currently the only full-time personnel assigned. The workforce needs are met by interdivisional "borrowing" of personnel with specialized areas of expertise who are identified for the specific assignment. The Division Director utilizes the following types of personnel: plant pathologist, geologist, chemist, biologist, and civil engineers.

Professionals from both energy-related offices have stated that the total number of people involved in energy pollution control and abatement, as well as conservation activities, number approximately 650.

C. Workforce Projections

Increases should occur in the private sector workforce at approximately a three percent per annum rate. The State Energy Office will experience growth as depicted in the following table.

TABLE XXII

ARKANSAS STATE ENERGY OFFICE

Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Director	1	1	1	1	1	1	0%	0%
Petroleum Allocation Officer	2	2	4	6	8	8	1%	37%
Energy Conservation Officer	3	3	4	6	7	9	1%	26%
Secretarial	3	3	3	3	3	3	N/A	0%
TOTAL	9	9	12	16	19	21	N/A	19%

The Department of Pollution Control and Ecology will require an increased workforce allocated to lignite mining problems. However, Environmental Preservation Division personnel have stated that the utilization of experts from other program areas will most likely continue. Divisional increases, however, are depicted in the following table.

TABLE XXIII

ARKANSAS DEPARTMENT OF POLLUTION CONTROL & ECOLOGY

Environmental Preservation Division
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Director	1	1	1	1	1	1	0%	0%
Geologist	0	0	1	1	1	1	*	20%
Secretarial	0	1	1	1	1	1	N/A	20%
TOTAL	1	2	3	3	3	3	N/A	30%

* unavailable

D. Training and Certification

Training is available to the engineering and scientific personnel through the universities and colleges. The State Energy Office has developed and conducts energy workshops for industrial manufacturers. This past year, 15 of these workshops were conducted with the total number of participants approximately 700.

The State Energy Office is currently developing plans to conduct workshops for the general public, specifically home owners, in energy conservation. State personnel are also being advised as to energy conservation methods.

E. Career Potential

Opportunities for careers in the energy field will be available in Arkansas on the degreed level. Post graduate training in certain areas such as nuclear power will be necessary. The advancing energy technology should require upgrade and in-service training of present personnel.

The state level career potentials will be limited. The area of private industry will offer the largest percentage of job opportunities during the next three to five years. The opportunities within the private sector will be representative of all areas of energy occupations with special emphasis on nuclear and coal expertise.

F. Conclusion

The Arkansas State Energy Plan has been developed and is currently awaiting approval from the Governor and the FEA. After the Plan has been approved, increased efforts will be allocated to the public at large in

an effort to present energy conservation concepts for use in the residential as well as the occupational setting.

Reclamation activities will be increasing annually pursuant to the decision to develop the state's vast lignite reserves. To date, the Department of Pollution Control and Ecology has issued 103 permits to 39 companies for mining operations on 2,378 acres. The Department has estimated that 425 acres of land mined for coal should be fully reclaimed. It is anticipated that minor revisions will be developed for the Strip Mining Act of 1971 as land degradation increases due to increased lignite mining by the early 1980's.

Bauxite mining is extensively under way in Central Arkansas. Prior to 1971, no mined lands were legally under reclamation requirements. Subsequent to 1971, however, all open Bauxite pits must be reclaimed.

The state's first nuclear powered electric generating plant began operation in fiscal year 1975. The Arkansas Power & Light "Nuclear I" unit 1, required an extensive Environmental Impact Statement. Currently, a second unit is under construction.

A solar energy demonstration project, funded by the Federal Energy Administration (FEA), is currently being conducted in an attempt to find a substitute for propane heating of poultry facilities.

The future workforce for this field will require training in specialized areas of expertise. The State of Arkansas, while desirous of protecting the quality of its environment, will proceed with energy resource development plans which will contribute to the state's energy independence. The future in Arkansas will present challenges to the energy conversion and conservation fields as well as to the resource development sector. New careers may well emerge from the state's future energy activities.

Selected Post Secondary Institutions With Formal Environmental Energy Programs

The State of Arkansas offers very few environmentally related post-secondary educational programs. Two institutions are described in the following pages: the University of Arkansas and Southwest Technical Institute.

The major share of the environmentally related educational programs are located within the University of Arkansas system. The University owes its origin to a public land grant of the Federal Congress which was accepted in 1871. The College of Agriculture and Home Economics is located at Fayetteville, Arkansas. The Bachelor of Science in Agriculture (B.S.A.) may be conferred upon a student upon successful completion of 132 semester hours. A program is available with an Environmental Science major. The degree is the result of an inter-college program in Environmental Sciences.

The University of Arkansas at Little Rock has developed a program which offers a Bachelor of Science degree in Environmental Health. This program is a cooperative effort which involves the University and the Arkansas State Board of Health, the Arkansas Department of Pollution Control and Ecology, County Health Departments and the Little Rock and North Little Rock City Health Departments. The curriculum was developed with the assistance of the Association of Arkansas Registered Professional Sanitarians and follows the guidelines established by the National Association of Sanitarians.

The institutions which are described in the following pages present an overview of the presently available post-secondary environmentally related programs.

SENIOR INSTITUTIONS

University of Arkansas
Little Rock, Arkansas

Program: Environmental Health (B.S.)

Hours required for major: Semester - 127
Program Inception: Not available
Staff Size: One associate professor (Ph.D.)
Enrollment: 34
Graduates (1976): 4
Placement: 1
Graduate Work: 0

Courses

English
Biology
Chemistry
Mathematics
Physical Education
History
Physics
Speech
Social Sciences
Psychology
Art
Social Sciences
Independent Study in Health Sciences
Principles of Health Sciences
Health Sciences Laboratory Techniques
Health Sciences Seminar

SENIOR INSTITUTIONS

University of Arkansas
Fayetteville, Arkansas

Program: Environmental Science (B.S.)

Hours required for major: Semester - 132
Program Inception: Not available
Staff Size: Ten
Enrollment: Not available
Graduates (1976): Not available
Placement: Not available
Graduate Work: Not available

Courses

English
Speech
Economics of Agricultural Economics
Sociology
Psychology
Political Science
Biology or Zoology
Botany
Bacteriology
Chemistry
Civil Engineering
Physics
Mathematics or Agronomy
Environmental Science
Soils and Man's Environment
Environmental Management
Waste Management
Pesticide Ecology
Economics of Environmental Management

COMMUNITY COLLEGES/TECHNICAL INSTITUTIONS

Southwest Technical Institute
East Camden, Arkansas

Program: Environmental Control (A.S.)

Hours required for major: Quarter - 70
Program Inception: 1968
Staff Size: Seven
Enrollment: 9
Graduates (1976): 4
Placement: 2
Graduate Work: 0

Courses - Not available

State Legislation

ARKANSAS AIR AND WATER

TITLE:

Water and Air Pollution Control Act
Arkansas Statutes 82-1901

PURPOSE:

To safeguard the air and water resources of the state by preventing and abating air and water pollution.

DEFINITIONS:

1. Sewage
2. Industrial waste
3. Other wastes
4. Pollution
5. Sewer system
6. Treatment works
7. Disposal system
8. Waters of the state
9. Discharge into waters of the state
10. Person
11. Air contaminant
12. Air pollution
13. Air contamination
14. Air contamination source
15. Air-cleaning device
16. Area of the state
17. Commission

ADMINISTERING AUTHORITY:

Department of Pollution Control and Ecology
Pollution Control Commission

AUTHORIZATIONS:

To administer and enforce air and water pollution laws and regulations;
To survey and investigate pollution in the state;
To develop a state water pollution control program;
To establish water quality standards;

AUTHORIZATIONS (Cont'd):

To approve and issue permits for construction and alteration of disposal systems;
To establish effluent limitation standards and issue discharge permits;
To act as the state lead agency in water pollution matters;
To develop a state air pollution control plan;
To issue air emission permits for pollution sources;
To issue regulations concerning air quality.

PROHIBITED ACTS:

To violate the discharge or emission conditions of any permit;
To cause any water pollution;
To tamper with monitoring devices;
To fail to obtain a permit for facility construction or discharges;
To cause any air pollution.

EXEMPTIONS:

Agricultural operations, residential fireplaces and incinerators, public agency actions, road construction operations.

PENALTIES:

Civil liability for damage caused imposed up to $5,000 per day;
Criminal fines of up to $10,000 or one year imprisonment.

ARKANSAS PESTICIDES

TITLE:

Pesticide Use and Application Act
Arkansas Statutes

PURPOSE:

To provide for the control of the use and application of pesticides to protect human health and the environment.

DEFINITIONS:

1. Animal
2. Beneficial insects
3. Certified applicator
4. Commercial applicator
5. Defoliant
6. Desiccant
7. Distribute
8. Environment
9. EPA
10. Equipment
11. FIFRA
12. Fungus
13. Insect
14. Land
15. License or permit
16. Nematode
17. Non-commercial applicator
18. Person
19. Pest
20. Pesticide
21. Pesticide dealer
22. Plant regulator
23. Private applicator
24. Restricted use pesticides
25. State restricted use pesticides
26. Supervise
27. Unreasonable adverse effect effect on environment
28. Weed
29. Wildlife

ADMINISTERING AUTHORITY:

State Plant Board

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To restrict and classify pesticides and their use;
To establish certification standards and certify commercial and private applicators;

AUTHORIZATIONS (Cont'd):

To license pesticide dealers;
To establish applicator categories;
To enter and inspect property in enforcement of the act.

CERTIFICATION OR LICENSING:

Pesticide dealers must be licensed; commercial, non-commercial and private applicators must be certified; knowledge and competence must be shown.

PROHIBITED ACTS:

To engage in application business or use of restricted pesticides without proper certification;
To sell or distribute pesticides without a license;
To violate terms of permit or license.

EXEMPTIONS:

Research activities, physicians, veterinarians.

PENALTIES:

Non-private violations - fines of from $500 to $2,000;
Private violations - fines of from $100 to $500.

ARKANSAS SOLID WASTE

TITLE:

Solid Waste Management Act
Arkansas Statutes

PURPOSE:

To regulate the collection and disposal of solid wastes to protect public health, prevent pollution, conserve natural resources, and enhance the quality of the environment.

DEFINITIONS:

1. Commission
2. Person
3. Municipality
4. Solid wastes
5. Disposal site
6. Solid waste management system

ADMINISTERING AUTHORITY:

Department of Pollution Control and Ecology
Pollution Control Commission
Municipalities

AUTHORIZATIONS:

To provide joint action on solid waste management;
To develop plans for solid waste management systems;
To issue regulations pursuant to the act relating to solid waste disposal;
To act as the state lead agency in solid waste matters;
To develop a statewide solid waste plan;
To approve and issue permits for solid waste facilities;
To establish certification standards for solid waste site personnel.

PROHIBITED ACTS:

To construct, alter or operate solid facilities without a permit;
To dispose of solid waste other than at an approved facility;
To dispose of solid waste on any public land or area;
To violate any other regulations or act provisions.

PENALTIES:

Fines of up to $1,000 or 30 days imprisonment.

ARKANSAS WASTE WATER

TITLE:

Waste Water Licensing Act
Arkansas Statutes

PURPOSE:

To protect public health through the certification of all public waste water treatment plant operators.

DEFINITIONS:

1. Commission
2. Licensing Committee
3. License
4. Waste water treatment plant
5. Operator

ADMINISTERING AUTHORITY:

Department of Pollution Control and Ecology
Pollution Control Commission
Licensing Committee

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To conduct license examinations;
To issue operator licenses;
To classify all waste water treatment plants.

CERTIFICATION OR LICENSING:

All waste water treatment plant operators shall be examined as to qualifications and be licensed in classification corresponding to the facility. Prior operators are not examined.

PROHIBITED ACTS:

To operate a waste water treatment plant without properly licensed operator;
To perform the duties of operator without proper certification.

PENALTIES:

Violations constitute misdemeanor.